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ABSTRACT

The interaction between prior achievement, anxiety, and different instructional treatments were examined. The expectation that there is an inverse relationship between prior achievement and the amount of instructional support required in order to accomplish an objective was tested. A total of 120 subjects (student volunteers from a senior campus and community college campus) participated in the study. The students listened to a brief lecture on an audio tape recorder: half were assigned to a situation in which they could rewind the tape to reinstitute instruction. The number of times the rewind button was activated was recorded. The other students could not rewind. A pretest, the Test Anxiety Scale, and the Worry Emotionality Scale were administered. After the audio lecture, a posttest (identical to the pretest) was administered, as well a readministration of the Worry Emotionality Scale. Data were analyzed by multiple linear regression techniques. The results, summarized in tabular form, were contrary to expectations. Interaction indicated that at low pretest levels there were no differences between groups; but, at higher test levels, the rewind group outperformed the no rewind group. (Author/GSK)

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Anxiety, Prior Achievement, and Instructional Support

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The purpose of this study was to examine the interaction between prior achievement, anxiety, and different instructional treatments. Specifically, it has been suggested (Tobias, 1976, 1978) that there was an inverse relationship between prior achievement and the amount of instructional support required in order to accomplish an objective. The achievement of students low in prior exposure to particular content is expected to be most facilitated by being provided with a variety of learning aids, called "instructional support". Conversely, students higher in prior achievement were expected to profit little from instructional supports. One purpose of this study was to test this expectation. Instructional support in the form of being able to rewind an audio lecture was provided to some students and not others.

There is a good deal of research relating student differences in anxiety to achievement from a variety of instructional methods. Tobias (1977, 1979) suggested that the performance of highly anxious students is most seriously debilitated by tasks demanding reliance on the student's intermediate term memory. Support for this hypothesis is available from a variety of sources, most recently in a study by Kreitzberg and Tobias (1979). In that study there was evidence that supported the interference of anxiety in short and intermediate term memory, whereas retrieval from long term memory appeared unaffected by anxiety. It was expected, then, that tasks in which students can reinstitute prior instructional segments should be differentially beneficial to students higher in anxiety, and leave the performance of low anxiety students unaffected. The formulation (Wine, 1972; Sarason, 1972) underlying these expectations was that high anxious students divide their attention between task demands and irrelevant concerns such as somatic preoccupations and negative self-concerns. Students lower in anxiety, on the other hand, spend more of their attention on task demands and less on the

irrelevant concerns, hence their achievement is superior compared to their high anxiety counterparts.

It was expected, therefore, that high anxiety students would profit most from having the opportunity to rewind an audio tape whereas the performance of students lower in anxiety should have been relatively unaffected by this form of instructional support.

Finally, an interaction among anxiety, prior achievement and instructional support was expected. Specifically, it was anticipated that the performance of anxious students lower in prior achievement would be most seriously disrupted in a situation where they were unable to reinstitute prior instructional input by rewinding the audio tape.

Method

All students participating in this experiment were required to listen to a brief lecture on an audio tape recorder. Half the group was randomly assigned to a situation in which they were free to rewind the tape so as to listen to prior segments of the lecture. The number of times the rewind button was activated was automatically recorded. The other students were prevented from rewinding the audio tape.

Procedure

The audio lecture dealt with the rituals involved in a Jewish prayer service, and was based on the instructional program developed by Tobias and Ingber (1976). This material was selected since it was expected that students would vary widely in their knowledge of this content. Students were first given a pretest, and afterwards the Test Anxiety Scale (Sarason, 1972) was administered. A Worry-Emotionality scale (Liebert and Morris, 1967) was then also administered with instructions that the students answer the questions in terms of how they were feeling at that moment. Students then listened to the

audio lecture by the use of earphones. Students were tested in groups of four to six, and in the no rewind group, the students behavior was closely monitored so that the audio tape was not rewound.

When students finished listening to the audio lecture a posttest, identical to the pretest, was administered followed by another administration of the Worry-Emotionality scale with instructions that students should respond as they felt while working on the instructional material.

Subject

A total of 120 subjects participated in this study. Student volunteers from a senior campus and a community college campus of the City University of New York participated in this experiment, in addition to a group of students from a community college from the State University of New York. Students volunteered for participation in this experiment, and received no renumeration or course credit for their participation.

Results and Discussion

Descriptive data on the two groups and means and standard deviations on a number of the variables for both groups are reproduced in Table 1.

Insert Table 1 about here

The data were then analyzed by multiple linear regression techniques, and the results of that analysis are summarized in Table 2.

Insert Table 2 about here

Several significant effects emerged from this analysis. As expected, pretest was significantly related to posttest, and the main effect of anxiety on performance was significant, with students low in anxiety outperforming

the high anxiety counterparts. In addition, there was a significant interaction between having the opportunity to rewind and prior knowledge of the subject matter. Contrary to expectations, however, the interaction indicated that at low pretest levels there were no differences between the groups. At higher test levels, however, the rewind group out performed the no rewind group.

One of the problems accounting for the unexpected results of this study, rested with the motivation of the students. None of the students was given credit of and kind for their participation in this experiment. It was clear that frequently student motivation was minimal. That is, students spent very little time on the posttest, and a substantial proportion of the students achieved a raw score of less than 5. A score of 5 can be obtained by anyone with a passing knowledge of the subject matter, suggesting that there was relatively little hard work devoted to performance on this task. Further evidence for the poor motivation of students is to be seen in the number of times students rewound the audio tape. The mean of 3.8 rewinds for a relatively technical subject matter indicated that students were clearly not interested enough in the task to utilize the rewind in order to improve achievement.

Given the low motivation of the students the results were not suprising. The general achievement for both groups was relatively low, and a slight increment in achievement for the group able to rewind the tape was probably attributable to those subjects utilizing the rewind option, since the correlation between posttest scores and the number of rewinds was .58. The predicted interactions between anxiety and rewinding the tape assumed that subjects were sufficiently involved in the task to feel that negative performance was a poor reflection on them. Observation of the students behaviors indicated, instead, that their major concern then was finishing the task as quickly as possible, rather than doing well.

Several major implications for future research emerged from this study. First of all, the finding that students high in prior achievement profitted most from having the opportunity to rewind deserves closer examination. If this finding stood alone, it might be written to the poor motivation of students with a rationale that students high in prior achievement were able to relate the subject matter more closely to their experience, and hence had somewhat higher motivation. The higher motivation in turn, may have influenced them to pay somewhat closer attention to the subject matter and, hence, profit more from the additional instructional support.

There are, however, some other findings suggesting that instructional support may not always be especially beneficial only to students at the lower end of the achievement continuum. Pflaum and Pascarella (1980) reported a study on the use of context cues in reading. They found that instructional support was beneficial at the lower and upper end of the achievement range. These findings suggest that in order for instructional support to work in the essentially linear fashion hypothesized, specific entry capabilities may be necessary. That is, it may be important to differentiate between two levels of prior achievement: First, pre-requisite prior achievement, the level of prior achievement without which it would be impossible to profit from any level of instruction offered in the particular investigation. Such prior achievement would not be expected to act in the essentially linear manner hypothesized by the achievement treatment formulation. That is, student lacking mastery of the pre-requisite skills would not profit most from additional instructional support. Conceivably, no amount of instructional augmentation can help students master concepts for which they do not have the pre-requisite knowledge and skills. The second type of prior achievement would be above and beyond the pre-requisites content.

That type of achievement would, in general, be expected to interact inversely with the prior achievement as specified by the achievement treatment formulation.

A further implication for future research emerged from this study. Students in classrooms ought to be utilized for such research, and the instructional subject matter should be such as to be easily integrated into the day to day work of the classroom. In that manner students are likely to feel that their work on the research task is of equal importance to classroom work in general, hence hypotheses dealing with test anxiety can be reliably examined.

In a succeeding study (Deutsch and Tobias, 1980) the option of being able to rewind a video tape was, again, studied in interaction with anxiety and prior achievement. In that investigation four video tape modules dealing with individualized instruction were used. The modules were related to the course content for all students. In that study the results were similar to those expected in the present investigation. That is, students low in prior achievement profitted most from having the opportunity to rewind the video tape and, similarly, students high in anxiety profitted most from the rewind option compared to those lower in anxiety. In general, the group having the opportunity to rewind the audio tape outperformed the group not having that option.

This latter study provides strong confirmation for the theoretical expectations dealing with prior achievement, anxiety and instructional support. Of greater interest for present concerns, it is suggested that if instructional research is to have any generality to life-like school settings, it is best to conduct such investigations in the context of an instructional situation having real consequences to the student, rather than one labeled a research task as was presently the case. Thus, while the present results were disappointing to the major expectations of this experiment it provided important guidelines for future research.

Table 1. Means and Standard Deviations for Both Groups on a Variety of Variables

	Groups			
	Rewind		No Rewind	
	Mean	SD	Mean	SD
Variables				
Pretest	1.7	1.9	1.9	4.4
Test Anxiety	18.2	7.4	18.2	6.2
Worry-Emotionality 1	15.7	7.8	15.2	5.7
Worry-Emotionality 2	18.0	9.6	18.3	7.0
Posttest	9.0	7.9	7.7	7.0
Listening Time	10.5	4.5	6.0	---
Age	18.8	9.8	20.7	11.2
No. of Rewinds	3.8	4.7	---	---

Table 2. Results of Multiple Linear REgression Analysis

Variable	Regression Coefficient [1]	Percent Variance	F
Pretest (P)	1.79	.01	2.53
Rewind (R)	-3.01	.38	76.53 **
Test Anxiety (A)	-.31	.04	8.66 **
P X R	-.63	.03	6.98 **
P X A	.03	.01	1
R X A	.17	.01	1
P X R X A	-.03	.01	1

[1] Constant = 10.9

References

Deutsch, T., & Tobias, S. Interaction among prior achievement, anxiety, and instructional method. Paper delivered to the annual convention of the American Psychological Association, Montreal, September, 1980.

Kreitzberg, C., & Tobias, S. Test anxiety, attention, and short term memory. Paper presented at the annual meeting of the American Psychological Association, New York, September, 1979.

Liebert, R.M., & Morris, L.W. Cognitive and emotional components of test anxiety, Psychological Reports, 1967, 20, 975-978.

Pflaum, S., Pascarella, E. Interactive effects of prior reading achievement and training in content on the reading of learning disabled children. Paper read at the annual convention of the American Educational Research Association, Boston, April, 1980.

Sarason, I.G. Experimental approaches to test anxiety: attention and the uses of information. In C.D. Spielberger (Ed.), Anxiety: current trends in theory and research. New York: Academic Press, 1972, Pp. 381-403.

Tobias, S. Anxiety research in educational psychology. Journal of Educational Psychology, 1979, 71, 573-582.

Tobias, S. Interaction between achievement and instructional method. Paper presented at the annual convention of the American Educational Research Association, Toronto, Canada, March, 1978.

Tobias, S. A model for research on the effect of anxiety on instruction. In Sieber, J., O'Neil, H.F. Jr., & Tobias, S. Anxiety, learning and instruction, Hillsdale, N.J.: Erlbaum Associates, 1977.

Tobias, S. Achievement treatment interactions. Review of Educational Research, 1976, 46, 61-74.

Tobias, S., & Ingber, T. Achievement-treatment interactions in programmed instruction. Journal of Educational Psychology, 1976, 68, 43-47.

Wine, J. Test anxiety and direction of attention. Psychological Bulletin, 1971, 76, 92-104.